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ABSTRACT

Only 25 percent of Americans participate in recommended levels of physical activity, despite the health benefits associated with physical activity. Physical activity promotion is an important public health issue. Several research studies indicate that physical activity interventions using theoretical frameworks such as the Stages of Motivational Readiness for Change Model (SOC) increase physical activity behavior among sedentary adults. The SOC Model posits that different intervention strategies should be applied depending upon the individual's current stage of readiness for change. The first section of this digest presents an overview of the SOC, in which individuals move through a series of stages as they adopt and maintain a new habit. The second section examines the efficacy of the SOC, focusing on targeted interventions; tailored interventions; delivering a stage-targeted intervention (precontemplation, contemplation, preparation, action, and maintenance); tailoring the intervention to the individual; and delivery channels and settings. The brief concludes that physical activity interventions based on the SOC Model have been shown to increase physical activity behavior among adults, and it can be applied in a variety of settings (Contains 39 references.) (SM)

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Physical Activity and the Stages of Motivational Readiness for Change Model

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President 's Council on Physical Fitness and Sports

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Physical Activity and The Stages of Motivational Readiness for Change Model

Introduction

In recent years the prevalence of cardiovascular disease (CVD) has decreased due to improvements in modifiable CVD risk factors including cigarette use, blood pressure, and cholesterol levels (CDC, 1999). Despite these improvements, cardiovascular disease continues to be the leading cause of death among Americans (AHA, 1995). Physical activity is one modifiable risk factor for CVD that has remained relatively constant and uninfluenced by public health efforts over the past ten years (CDC, 2001). Therefore, physical activity promotion among sedentary adults has the potential to have a strong public health impact on CVD risk reduction. Physical inactivity is also associated with an increased risk of cancer (e.g., colorectal, endometrial; Levi et al., 1993; McTiernan et al., 1998), which is the second leading cause of death among Americans (ACS, 2002). Additionally, physical inactivity is associated with other health problems including increased risk of non-insulin dependent diabetes (NIDDM; USDHHS, 1996) and the incidence of stroke among women (Hu et al., 2000).

Only 25% of Americans participate in the recommended levels of physical activity despite the health benefits associated with physical activity (CDC, 2001). Therefore, physical activity promotion is an important public health issue. Several research studies indicate that physical activity interventions using theoretical frameworks such as The Stages of Motivational Readiness for Change Model increase physical activity behavior among sedentary adults (e.g., Dunn et al., 1999; Marcus, Bock et al., 1998).

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Overview of The Stages of Motivational Readiness for Change Model

According to The Stages of Motivational Readiness for Change Model (SOC), individuals move through a series of stages as they adopt and maintain a new habit (Prochaska & DiClemente, 1983). Researchers have applied these studies to physical activity (Dunn et al., 1997; Marcus, Rossi et al., 1992). Specifically, the stages include Precontemplation, Contemplation, Preparation, Action, and Maintenance. Precontemplators are inactive and not thinking about becoming active. Contemplators are inactive but are thinking about becoming active. Preparers are physically active but not at the recommended levels (30 minutes or more of moderate intensity physical activity on most, preferably all days of the week, Pate et al., 1995; USDHHS, 1996). Individuals in the Action Stage are physically active at the recommended levels but have been active for less than six months. Individuals in the Maintenance Stage are physically active at the recommended levels and have been for six or more months. Given that it often takes many attempts before individuals succeed at adopting and maintaining physical activity, movement across the stages is thought to be cyclical rather than linear. Marcus and Simkin (1993) have developed a four-item self-report questionnaire that categorizes individuals into one of the five stages of change. The questionnaire and guide for scoring is presented in Table 1. Additionally, questionnaires and scoring for all of the instruments mentioned in this article are available in "Motivating People to Be Physically Active" (Marcus & Forsyth, 2003).

According to the SOC model, individuals use various processes of change as they progress through the stages of change. Marcus and colleagues have identified five behavioral processes and five cognitive processes used throughout the stages of changes (Marcus, Rossi, et al., 1992). The behavioral processes include substituting alternatives (e.g., participating in physical activity when experiencing stress), enlisting social support (e.g., finding a family member to provide support for physical activity), rewarding yourself (e.g., doing something special for reaching a physical activity goal), committing yourself (e.g., making promises to be physically active), and

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Table 1.
Physical Activity Stages of Change Questionnaire

For each of the following questions, please circle Yes or No. Please be sure to read the questions carefully.

Physical activity or exercise includes activities such as walking briskly, jogging, bicycling, swimming, or any other activity in which the exertion is at least as intense as these activities.

1) I am currently physically active. **NO** **YES**

2) I intend to become more physically active in the next 6 months. **NO** **YES**

For activity to be regular, it must add up to a total of 30 minutes or more per day and be done at least 5 days per week. For example, you could take one 30-minute walk or take three 10-minute walks for a daily total of 30 minutes.

3) I currently engage in regular physical activity. **NO** **YES**

4) I have been regularly physically active for the past 6 months. **NO** **YES**

Scoring Algorithm:

Precontemplation:	Question One = No; Question Two = No
Contemplation:	Question One = No; Question Two = Yes
Preparation:	Question One =Yes and Question Three = No
Action:	Question One = Yes; Question Three = Yes; and Question Four = No
Maintenance:	Question One = Yes; Question Three = Yes; Question Four = Yes

Adapted from Marcus, Rossi et al., 1992.

reminding yourself (e.g., posting physical activity reminders around the house). Cognitive processes include increasing knowledge (e.g., reading about being physically active), being aware of risks (e.g., becoming aware that being inactive is unhealthy), caring about consequences to others (e.g., thinking about how inactivity affects family and friends), comprehending benefits (e.g., understanding the benefits of being active), and increasing healthy opportunities (e.g., increasing awareness of physical activity programs). Descriptions of the cognitive and behavioral processes are outlined in Table 2. Among individuals progressing through the stages of change, use of the cognitive strategies typically peak in the Preparation Stage and use of the behavioral processes typically peak at the Action Stage. Marcus and colleagues have developed a 40-item measure to examine the processes of change (see Marcus, Rossi, et al., 1992).

Researchers also postulate that individuals weigh the pros and cons of adopting or maintaining physical activity as they progress through the stages of change. This process is referred to as decisional balance (Marcus, Rakowski, et al., 1992). For example, one pro of engaging in physical activity is, "Regular physical activity would help me relieve tension" and one con is, "I would have less time for my family and friends if I were regularly physically active." Research indicates that typically Precontemplators and Contemplators report fewer pros than cons of physical activity (Prochaska et al., 1994). The frequency of pros becomes greater than cons in the Preparation Stage and continues to be greater in the Action and Maintenance Stages (Prochaska et al., 1994). Marcus and colleagues have developed the 16-item Decisional Balance Measure for Physical Activity to examine the pros and cons of physical activity (Marcus, Rakowski, et al., 1992).

Self-efficacy is another important construct that changes as individuals progress through the stages of change (Marcus & Owen, 1992; Marcus, Selby, et al., 1992). Self-efficacy refers to one's confidence in their ability to adopt physical activity. Research indicates that self-efficacy for physical activity increases as individuals progress through the stages of change. Marcus and colleagues have developed a five-item scale that examines self-efficacy for physical activity in various situations such as situations in which an individual feels fatigued or encounters inclement weather (Marcus, Selby, et al., 1992).

Efficacy of The Stages of Motivational Readiness to Change Model

"Patient-treatment matching" refers to matching intervention strategies with characteristics of an individual or group. The rationale for patient-treatment matching is that individuals are at different stages of readiness to change their behavior and therefore, interventions should differ depending on the individual's stage of readiness to change. For example, individuals who are working on maintaining their physical activity level (i.e., Maintenance Stage) will require different intervention strategies than individuals thinking about becoming physically active (i.e., Contemplation Stage). Specifically, it would be more applicable to discuss relapse prevention strategies with individuals who are attempting to maintain their physical activity level than with individuals who are thinking about becoming physically active.

Patient-treatment matching can be implemented using a "targeted" and/or "tailored" approach. Researchers frequently use the terms "targeted" and "tailored" interchangeably; however, there are important differences between these terms in regards to messages derived from these approaches. A "targeted" message provides information directed to a certain group, which is typically based on one or more variables, such as stage of motivational readiness. One disadvantage of targeted interventions relative to tailored intervention is that targeted information may not be equally appropriate for every individual of an identified group, and may not address the unique needs, interests, and concerns of each individual (Kreuter et al., 1999).

Tailored messages, on the other hand, are customized to each individual by deriving the messages based on several variables believed to be important for changing the particular target behavior. For example, a tailored approach would

Table 2. The Processes of Change

Cognitive strategies	Behavioral strategies
Increasing knowledge Encourage your client to read and think about physical activity.	**Substituting alternatives** Encourage your client to participate in physical activity when she is tired, stressed, or unlikely to want to be physically active.
Being aware of risks Provide your client with the message that being inactive isvery unhealthy.	**Enlisting social support** Encourage your client to find a family member, friend, or co-worker who is willing and able to provide support for being active.
Caring about consequences to others Encourage your client to recognize how his inactivity affects his family, friends, and co-workers.	**Rewarding yourself** Encourage your client to praise himself and reward himself for being physically active.
Comprehending benefits Help your client to understand the personal benefits of being physically active.	**Committing yourself** Encourage your client to make promises, plans, and commitments to be active.
Increasing healthy opportunities Help your client to increase her awareness of opportunities to be physically active.	**Reminding yourself** Teach your client how to set up reminders to be active, such as keeping comfortable shoes in the car and at the office, ready to be used at any time.

Reprinted, by permission, from Marcus & Forsyth, 2003. *Motivating People to Be Physically Active*. (Champaign, IL: Human Kinetics), 18.

provide feedback based on the individual's reported level of self-efficacy (e.g., Marcus, Bock, et al., 1998). Another example would be individuals who acknowledge several pros on the decisional balance instrument might receive the following tailored message: "The information you have given us shows that you are aware of the benefits of regular exercise. In this way, you are like others who succeed in becoming more physically active. What you may find helpful in making even more progress toward becoming regularly active, is to place even less value on the negative aspects of exercise, and more on the benefits" (Marcus, Bock, et al., 1998).

Research indicates that both targeted and tailored approaches based on the SOC Model are effective for promoting physical activity (Marcus & Forsyth, 2003). The following two sections summarize the physical activity intervention literature examining targeted and tailored interventions.

Targeted Interventions

Marcus and colleagues conducted a study in which community volunteers (n = 610) completed a six-week physical activity intervention targeted to the participants' stage of change (Marcus, Banspach, et al., 1992). Thirty percent of the participants who were in the Contemplation Stage at baseline (i.e., thinking about beginning physical activity) and 61% of participants who were in the Preparation Stage at baseline (i.e., participating in occasional physical activity) progressed to the Action Stage (i.e., participating in regular physical activity) following treatment. Also, 31% of the participants in the Contemplation Stage at baseline progressed to Preparation following the intervention.

Another study replicated these findings in a randomized controlled trial conducted in a worksite sample. Participants were randomly assigned to an intervention targeted to the participants' stage of change or to a non-targeted standard self-help intervention. Participants in the targeted intervention were more likely to progress one or more stages from baseline to the end of treatment (i.e., three months) than participants receiving the non-targeted intervention (Marcus, Emmons, et al., 1998). Marcus and colleagues conducted another study in which physicians delivered the stage-targeted physical activity intervention to older adults (Marcus, Goldstein, et al., 1997). Participants who received a greater number of counseling messages were more likely to become physically active than those receiving fewer messages.

Tailored Interventions

Research indicates that combining a tailored approach with a targeted approach is also efficacious for increasing physical activity behavior. Marcus, Bock, and colleagues (1998) conducted a randomized controlled trial in which sedentary participants (n=194) were randomly assigned to a tailored intervention group or a comparison group consisting of standard treatment (materials were not targeted or tailored). The intervention group was administered stage-matched manuals (i.e., targeted intervention materials) and individualized advice and feedback based on participants' responses to constructs believed to be important for behavior change (i.e., self-efficacy, weighing the pros and cons of physical activity, behavioral and cognitive processes of change). Participants in the intervention group significantly increased the number of minutes of physical activity per week and were more likely to achieve the CDC/ACSM recommended level of physical activity than the comparison group. Additionally, the increase in physical activity participation was maintained at the 12-month follow-up (Bock et al., 2001).

Delivering a Stage-Targeted Intervention

The following sections describe how to deliver a physical activity intervention targeted to the individual's stage of change. Specifically, the behavioral strategies appropriate for each stage of change are outlined. The intervention described below is for healthy individuals; however, the intervention can be modified to apply to other segments of the population such as individuals with chronic physical or psychological conditions.

Precontemplation. Individuals in the Precontemplation Stage are currently not active and are not thinking about becoming active. The goal of an intervention for individuals in this stage is to help them begin thinking about becoming physically active and the role physical activity could have in their lives. At this stage, it is important to assess an individual's perception of the pros and cons of becoming physically active. Clinicians should educate individuals about the benefits (i.e., pros) of physical activity including the health benefits such as reduced risk of CVD and improved cholesterol levels, blood pressure, osteoporosis, mood, stress, and energy levels.

It is equally important to discuss the cons of physical activity with individuals at this stage, given that the negative aspects of being physically active may interfere with the individual eventually starting a physical activity program. One example of a con is the belief that less time will be available for spending with family and friends if one becomes physically active. In this case, the clinician could suggest that the individual think about how to make physical activity a family activity (e.g., family bicycle rides) and how to be active while the family is engaged in sedentary activities (e.g., take a 30-minute walk during the child's 30-minute piano lesson instead of reading magazines at the studio).

Related to the cons of physical activity, it is also important to discuss specific barriers to physical activity. For example, one commonly reported barrier is lack of enjoyment of physical activity (e.g., King et al., 1988). Sedentary individuals may have previously engaged in exercise and associate physical activity with sweating and other unpleasant physiological sensations. These individuals should be educated that research indicates that physical activity does not have to be at the vigorous level for individuals to experience the benefits of physical activity (Pate et al., 1995). Research studies have shown that the popular phrase "No pain, no gain" is untrue (Pate et al., 1995). Individuals should be encouraged to participate in any physical activity that is enjoyable, as long as it is at least of moderate intensity. Individuals should be reminded that there are many ways to increase enjoyment of physical activity including doing an activity that is enjoyable, engaging in an activity with somebody who is enjoyable, or doing an activity while experiencing enjoyable scenery. Additionally, individuals could be reminded that walking, cleaning the house, and gardening are all everyday activities that can be done at the moderate intensity level.

Another barrier that may interfere with starting a physical activity program is the belief that one is too old and/or not healthy enough to start an activity program. Research indicates that physical activity is both safe and beneficial for many older adults (e.g., King et al., 1995). Research also suggests that it is safe and beneficial for many individuals with a history of CVD or other health problems to begin a physical activity program under the supervision of their physician (Simons-Morton et al., 1998).

Another commonly reported barrier to physical activity is not having enough time and/or a lack of energy to be physically active (King et al., 2000; Zunft et al., 1999). If time is a barrier, individuals can be encouraged to divide the physical activity over the course of the day. For example, individuals could be reminded that they can engage in physical activity three times per day for 10 minutes per occasion rather than 30 continuous minutes (Debusk et al., 1990; Ebisu et al., 1985). For example, individuals could be encouraged to take 10-minute walks before work, during their lunch break, and after work. Additionally, it may be beneficial to remind individuals that physical activity can actually lead to an increase in energy levels.

Environmental constraints, such as a lack of access to physical activity facilities and parks, are commonly reported barriers to physical activity (e.g., Corti et al., 1997; Sallis et al., 1998). For example, joining a health club or purchasing physical activity equipment is expensive and many individuals perceive this as a barrier. However, health clubs and special equipment are not necessary for physical activity participation. Simply purchasing a good pair of walking shoes is all that is needed to become an active person. Physical activity can be performed by walking stairs at work, walking the perimeter of a shopping mall, exercising to an aerobics tape rented from the local library, taking a walk in the neighborhood, or dancing to music in the family room. It is important for individuals to learn to be flexible and creative when planning physical activities.

Another barrier that individuals may report is the fear of injury while engaging in physical activity. Individuals should be reminded that most injuries can be avoided by using appropriate techniques. For example, it is important to engage in stretching and light activities before and after engaging in physical activity.

Goal setting is another behavioral strategy that is important for changing physical activity behavior. Goals should be implemented in every stage and the type of goal should vary depending on the individual's stage of change. An example of a goal for a Precontemplater is reading an article about the benefits of physical activity. Ideally, individuals in the Precontemplation Stage will begin thinking about becoming physically active and advance to the next stage, which is Contemplation.

Contemplation. Individuals in the Contemplation Stage are not currently physically activity but are thinking about becoming active. The goal of this stage is to increase the individuals' likelihood that they will take steps to become physically active. Similar to individuals in the Precontemplation Stage, individuals in this stage should consider the pros and cons of physical activity as discussed above. Additionally, individuals should be provided with specific information about starting a physical activity program and advice as to how to make physical activity a part of their daily lives.

In taking steps towards becoming physically active, the individuals should first be encouraged to decide on what activities are best suited for their health and lifestyle. If individuals have been active in the past, they should consider the activities they found enjoyable. Next, individuals can determine what activity they can realistically fit into their daily schedule. It is important for individuals to increase their awareness of small changes that could be made to increase physical activity such as parking further away from a particular destination or taking the stairs instead of the

escalator or elevator. Based on this information, the frequency (i.e., number of times per week), duration (i.e., number of minutes of physical activity each day), and intensity of the activity can be decided and integrated into the plan.

Specific physical activity goals can next be made based on the physical activity plan. It is important that the goals be realistic given that unrealistic goals can lead to disappointment and frustration. The individual may discontinue a physical activity program if goals are set too high. The individuals should be reminded that it is important to start slowly and gradually increase physical activity over time.

Learning theory states that individuals will be more likely to repeat a behavior if the behavior is rewarded. Therefore, it is important for individuals starting a physical activity program to reward themselves for meeting their goals. Shaping, which is the reinforcement of successive approximations of a particular target behavior, is one reinforcement schedule that can be applied to physical activity. As applied to physical activity, the individual could be reinforced for engaging in physical activity for 15 minutes per day and gradually increase the reinforcement criteria to 30 minutes per day. Additionally, individuals could gradually increase the number of days they are physically active and then increase the number of minutes of activity per day. This program would increase the likelihood of adherence to the program, in addition to reducing risk of injury due to overexertion.

Research indicates that individuals who have social support for being physically active are more likely to maintain a physical activity program (Sallis et al., 1987; Tessaro et al., 1998). Social support can include actual participation in physical activity with the individual, praising the individual for engaging in physical activity, or helping the individual make time for physical activity (e.g., provide childcare). When creating a physical activity plan, it is important for the individual to consider how social support will play a role in his or her ability to start and maintain the physical activity program (e.g., engage in physical activity alone or with a friend or family member). Regarding goal setting in the Contemplation Stage, individuals should set specific goals that involve taking specific steps toward becoming physically active. For example, one weekly goal may be to buy a good pair of walking shoes and talk to a family member about their plan to become physically active.

Preparation. Individuals in the Preparation Stage are engaging in physical activity but not at the recommended levels. The goal for individuals in this stage is to increase their physical activity participation to the recommended levels. Individuals in this stage should develop a physical activity plan in which they engage in physical activity at the recommended levels (i.e., 30 minutes or more of activity at least of moderate activity on most, preferably all days of the week).

Many of the same strategies described in the Contemplation Stage can also be applied in this stage, while carefully considering the goal differences between the two stages (i.e., start physical activity vs. increasing activity to recommended levels). For example, similar to the Contemplation Stage, the individual should determine when and what type of activity works best with their particular lifestyle. Since the individual is already doing some activity, information obtained from the current activity can be used to devise the physical activity plan (e.g., time of day for activity that works best with their schedule, type of activity that is most enjoyable). Also similar to the Contemplation Stage, social support, setting realistic goals, and reinforcing physical activity participation at the recommended levels are also important in this stage.

The key to the Preparation Stage is overcoming the barriers that prevent the individual from progressing from some activity to physical activity participation at the recommended levels. For example, individuals may report that inclement weather interferes with their physical activity program. Individuals may participate in physical activity sporadically due to changes in weather conditions. This barrier can be overcome by developing a list of activities for when the weather prohibits physical activity outdoors (e.g., walking in the mall, exercise videos, walking stairs). Another factor that may influence regular physical activity is fatigue in that individuals may be less likely to engage in physical activity on days they feel fatigued. Individuals should be educated that physical activity may actually improve fatigue by increasing energy levels and improving quality of sleep. Similarly, mood variations may lead to irregular activity patterns. Research indicates that physical activity can improve mood (Dunn et al., 2001; Lawlor & Hopker, 2001) and it is important that individuals consider this when skipping a physical activity session.

Similar to the previous stages, goal setting can play an instrumental role in progressing the individual to the next stage of change. Individuals should be encouraged to set specific goals that are daily, weekly, and/or monthly goals and that gradually increase their physical activity to the recommended levels. For example, the individual's initial goal may be to engage in 60 minutes of physical activity per week and then gradually increase the goal to 150 minutes per week. In order to assess attainment of goals, self-monitoring becomes very important during the Preparation Stage. It is important for individuals to monitor their physical activity using a daily log that can be designed depending on individual preferences. For example, the individual could simply record the number of minutes of physical activity they engage in each day on a monthly calendar or alternatively, the individual could utilize a detailed log containing frequency, duration, type, and intensity of activity. The key is that the individual utilize a log that they will adhere to and one that will help in the achievement of their goals (Marcus & Forsyth, 2003). Another self-monitoring option is using a pedometer, which is an objective monitor worn to record and display number of steps taken per day (Tudor-Locke, 2002).

Action and Maintenance. Individuals in the Action Stage are physically active at the recommended levels but have been regularly active for less than six months. Individuals in the Maintenance Stage are physically active at the recommended levels and have been for six or more months. The goal for individuals in the Action and Maintenance Stages is to maintain their physical activity participation.

One important strategy for individuals in the Action or Maintenance Stage is to identify risk factors for future

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relapse. Vacations, illness, stressful life events, and boredom of the physical activity routine are common situations in which individuals may discontinue physical activity participation. Regarding vacations, individuals should investigate the physical activity options (e.g., physical activity facilities in the hotel or walking paths) and make a physical activity plan prior to the vacation. Illness contributes to a relapse when individuals fail to return to their physical activity program after recovering from an illness. It is important for individuals to recognize illness as a barrier and gradually return to their physical activity program once their physician agrees it is safe. Because stressful life events can contribute to a relapse, it is important to educate individuals that physical activity may be especially important during stressful times given that is can help alleviate stress and increase energy. This can be a time when taking multiple 10-minute walks each day may be particularly useful both to cope with stress and to fit in activity when life is more chaotic than usual. Finally, type of physical activities should be varied to decrease the likelihood of boredom. If individuals prefer one type of activity such as walking, it is important to keep this activity interesting by varying the route, inviting friends, and/or walking indoors. Examples of other strategies to use with individuals in the Action and Maintenance Stages can be found in Marcus and Forsyth (2003).

Similar to the Preparation Stage, it is important to set goals and monitor physical activity in the Action and Maintenance Stages. Both short and long-term goals should be made and reinforcement should continue for achieving these goals. Goal setting is important in these stages because it decreases the likelihood of becoming bored with a particular physical activity program. At this stage, it may also be important for individuals to set goals related to secondary gains associated with physical activity. For example, individuals with hypertension may set a goal of decreasing their blood pressure.

Tailoring the Intervention to the Individual

Because there are important differences across individuals within each stage of change, it is also important to tailor the intervention to the individual. The intervention can be tailored to responses to questionnaires including processes of change, self-efficacy, and decisional balance. For example, individuals with low self-efficacy would receive strategies for increasing their confidence that they can be physically active in challenging situations. Additionally, discussions of the benefits of physical activity should be tailored to the individual's existing beliefs and knowledge regarding physical activity. Individuals may be aware of some of the benefits of physical activity and this existing knowledge should be reinforced in the context of education regarding other benefits. Another component of a tailored approach is taking into consideration the individual's background. For example, if the individual has a family history of CVD, the clinician could emphasize that physical activity participation reduces the risk of CVD. Other important individual differences factors to consider include barriers to physical activity, reinforcers of physical activity, and type of social support needed for physical activity adherence.

Delivery Channels and Settings

The strategies discussed above could be delivered through a variety of channels including face-to-face and non-face-to-face delivery strategies including print and telephone. As discussed earlier, print interventions that are targeted and/or tailored based on the SOC Model are effective for increasing physical activity (e.g., Dunn et al., 1999; Marcus, Bock, et al., 1998; Marcus, Emmons, et al., 1998). Additional research is needed to examine if targeted and/or tailored interventions can be effectively delivered via the Internet (Marcus et al., 2002). One important advantage of using the Internet is that it has the potential of having an important health impact by reaching the large number of Americans who are sedentary. In addition to channel, the strategies outlined above can be delivered in a variety of settings including individual sessions, group-based interventions, worksites, primary care offices, and communities.

Summary and Conclusions

Physical activity interventions based on the SOC Model have been shown to increase physical activity behavior among adults (Dunn et al., 1999; Marcus, Bock, et al., 1998; Marcus, Emmons, et al., 1998). This model can be applied in a variety of settings (e.g., group, community, primary care) using various delivery channels (e.g., face-to-face, print, telephone). The model posits that different intervention strategies should be applied depending on the individual's current stage of readiness for change. We have provided an overview of how to deliver interventions based on the SOC Model. A more detailed description of delivering this type of intervention can be found in "Motivating People to be Physically Active" (Marcus & Forsyth, 2003), which provides clinicians with detailed descriptions of the delivery of intervention strategies specific to stage of change and provides questionnaires relevant to stage of change.

In summary, despite the health problems associated with physical inactivity, only 25% of Americans are physically active at the recommended levels (CDC, 2001). Physical activity promotion is therefore an important public health issue. There is a need for widespread delivery of evidence-based interventions in order to make a public health impact on physical activity.

Despite the health problems associated with physical inactivity, only 25% of Americans are physically active at the recommended levels. Interventions based on the Stages of Change Model have been shown to be effective in changing this pattern of sedentary living.

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